U.S. Department of Energy
Office of River Protection
P.O. Box 450
Richland, Washington 99352

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APR 2 2 2003

03-ED-020



Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336

Dear Mr. Wilson:

RESPONSE TO COMMENTS ON PERMIT DESIGN PACKAGE PTF-001, REVISION 0

Reference: Ecology letter from M. A. Wilson to R. J. Schepens, ORP, dated October 31, 2002.

This letter provides documentation of the resolution of Ecology comments on Permit Design Package PTF-001. The attachment documents the resulting comment responses and agreements reached by our respective staffs to Ecology comments provided in the reference. Draft responses were discussed with Ecology staff and revised based on input received.

If you have any questions, please contact Lori A. Huffman, Environmental Division, (509) 376-0104.

Sincerely,

James E Rasmussen, Director
Environmental Division

ED:LAH

Attachment

cc: See page 2

cc w/attach:
B. G. Erlandson, BNI
R. F. Naventi, BNI
J. Cox, CTUIR
S. L. Dahl, Ecology
J. Grantham, Ecology
S. J. Skurla, Ecology
S. A. Thompson, FHI
J. L. Hanson, INNOV
P. Sobotta, NPT
J. B. Hebdon, RL
A. C. McKarns, RL
R. Jim, YN
Administrative Record
Environmental Portal, LMSI

Attachment
03-ED-020

# Response to Ecology Comments on Permit Design Package PTF-001

**RESPONSE TO THE STATE OF WASHINGTON DEPARTMENT OF ECOLOGY (ECOLOGY) COMMENTS ON PERMIT DESIGN PACKAGE PTF-001**

1. Independent, Qualified, Registered, Professional Engineer (IQRPE Report, 24590-CM-HC4-HXYG-00138-01-01C

Ecology Comment: *Please submit one copy of the following documentation referenced by the IQRPE Report to Ecology for review. Pursuant to Condition III.10.E.9.b.i., information (drawings, specifications, etc.) already included in Attachment 51, Appendices 8.0 through 11.0 of the Permit, may be included in the report by reference. Therefore, information on which the certification report is based not already included in Attachment 51, Appendices 8.0 through 11.0 of the Permit, may not be referenced, but must be submitted with the IQRPE Report.*

a. *24590-WTP-DB-ENG-01-001, Revision 0, Basis of Design.*
b. *Drawing No. 24590-PFT-M6-PWD-00041, Revision C, P&ID-PTF Plant Wash and Disposal System C2 Area Floor Drains Collection Vessel.*
c. *24590-WTP-3PS-NLLR-T0002, Revision 0, Engineering Specification for Furnishing, Detailing, Fabrication, Delivery, and Installation of Stainless Steel Liner Plates.*
d. *24590-PFT-M6-PWD-00012, Revision B, P&ID-PFT Plant Wash and Disposal System C5/R5 Process Cell Sumps (Q).*

Response: Uncontrolled copies of the Basis of Design, Engineering Specification for Furnishing, Detailing, Fabrication, Delivery, and Installation of Stainless Steel Liner Plates document, Drawing No. 24590-PFT-M6-PWD-00041, Revision C, P&ID-PTF Plant Wash and Disposal System C2 Area Floor Drains Collection Vessel, and 24590-PFT-M6-PWD-00012, Revision B, P&ID-PFT Plant Wash and Disposal System C5/R5 Process Cell Sumps (Q) were provided to Ecology on December 13, 2002. In addition, Ecology staff has been given access to project documents via the externally accessible DocSearch; Bechtel National, Inc. will be happy to provide assistance or training to Ecology staff to facilitate their use of this tool.

2. Flooding Volume for Pretreatment (PT) Facility, 24590-PTF-PER-M-02-005, Revision 3:

Ecology Comment: In *the next revision of this drawing, at elevation –45 foot, please show dimensions of the wall opening(s) at floor level for the hydraulic connection of cells.*

Response: *Flooding Volume for PT Facility* (24590-PTF-PER-M-02-005), Revision 7 included dimensions of wall opening(s) at floor level for the hydraulic connection of cells for the -45 foot level, and was provided with the revision to permit design package PTF-002.

3. Leak Detection-Sump Level Measurement in Secondary Containment Systems, 24590-WTP-PER-J-02-001, Revision 1

Ecology Comment:

3a. *Page 1, Section 3.1.1.1, Second Paragraph: The text states "The steam ejectors are designed with enough capacity to empty the cell sump within 24 hours." It is Ecology's understanding that specific type(s) of steam ejectors for the sumps have yet to be selected and once selected, the specifications and vendor information will be submitted to Ecology for review and approval. It is important to remind the Permittees that Condition III.10.E.9.b.ii requires secondary containment systems to be designed in accordance with WAC 173-303-640(4)(b) through (f), which requires the secondary containment system to be designed and operated to remove released wastes or accumulated precipitation from the secondary containment system within 24 hours. If the Permittees are unable to design and operate the secondary containment system to meet this requirement, the secondary containment system must be designed and operated to remove wastes and accumulated precipitation from the containment system in a timely as manner as possible to prevent harm to human health and the environment, and the Permittees must demonstrate to Ecology's satisfaction that removal of the release waste or accumulated precipitation cannot be accomplished within the required 24 hour period [WAC 173-303-640(4)(c)(iv)]. In addition, prior to initial receipt of dangerous and/or mixed waste, Condition III.10.E.9.e.iii requires the Permittees to submit to Ecology, for review and approval, detailed operational plans and descriptions demonstrating that spilled or leaked waste and accumulated liquids can be removed from the secondary containment system within 24 hours.*

Response: Sump pumps and ejectors are sized based on projected leak conditions, not necessarily to remove the contents of a full vessel within 24 hours. The Basis of Design specifies the Waste Treatment and Immobilization Plant (WTP) be designed for a 40-year life. Complete tank failure is not expected. If sump pumps and ejectors were sized to remove the contents of a full vessel within 24 hours, they would be oversized handling the more realistic nominal leak case. Even if dangerous waste were to enter secondary containment, the six-to-eight feet thick concrete -- lined with stainless steel or coated with special protective coating -- would preclude the migration of dangerous waste into the environment.

The design of the PTF Elevation –45 secondary containment provides an example. *Sump Data for the PT Facility* (24590-PTF-PER-M-02-006) identifies the Elevation –45 sump (PWD-SUMP-00040) to be 233 gallons. SUMP-00040 is provided with two steam ejectors, each sized at a nominal 70 gpm. The ejectors were sized to handle the contents of either the Ultimate Overflow Vessel (PWD-VSL-00033) or the HLW Effluent Transfer Vessel PWD-VSL-00043 (approximately 29,500 gallons), combined with a 330 gpm overflow from the Ultimate Overflow Vessel (PWD-VSL-0033) lasting 30 minutes. Less than five hours would be required to remove the resulting approximate 40,000 gallons from the Elevation –45 sump.

*Flooding Volume for PT Facility* (24590-PTF-PER-M-02-005) states that the source of the flood volume in the Elevation –45 pit is one of the 63,383 cubic feet Waste Feed Receipt Vessels. The

content of one Waste Feed Receipt Vessel is completely contained within the Elevation –45 pit secondary containment liner.

Clearly, the two 70 gpm ejectors could not remove 63,383 cubic feet (approximately 474,000 gallons) within 24 hours. Yet, because of the eight feet thick concrete walls and floor and presence of the stainless steel liner (the design of which is presented in *Secondary Containment Design* (24590-WTP-PER-CSA-02-001), the waste would remain contained after 24 hours, and would not enter the environment.

3b. *Pages 1-2, Section 3.1: As discussed with the Permittees in several meetings, the use of a wet sump will require some method or procedure to routinely verify that the sump is not leaking (testing, trending liquid level or refill volume, etc.). Please submit method and procedure descriptions routinely verifying wet sumps are not leaking for Ecology review and approval prior to installation of the wet sump instrumentation portion of the tank system leak detection system.*

Response: Prior to initial receipt of dangerous and/or mixed waste, a method or procedure description demonstrating wet sump operations will be submitted to Ecology, as required by Conditions III.10.E.9.e.ii and III.10.E.9.e.iii.

3c. *Pages 4-7, Figures 1-4: As noted, the sketches and descriptions of level detection instruments proposed for leak detection in this document are typical, and therefore, descriptions of how they function are very general. It is Ecology's understanding that the specific types of leak detectors to the tanks systems have yet to be selected, and as a consequence, procurement specifications, vendor, or other information that document the selected leak detectors waste compatibility, operational parameters, maintenance requirements, etc., are not available. Please submit this information for Ecology review and approval prior to installation of the instrumentation portion of the leak detection system.*

Response: Additional detail regarding the leak detection systems to be used in the WTP will be provided prior to the installation of leak detection instrumentation. In addition, vendor information will be provided for incorporation into the Administrative Record in accordance with Condition III.10.E.9.b.v as listed in Ecology's Comment 4.

4. Sump Data for PT Facility, 24590-PTF-PER-M-02-006, Revision 2:

Ecology Comment: *Pages 1-2, Section 3.1 and Table 1 "PTF Cell Sump Data": Ecology notes sump PWD-SUMP-00071 is a dry sump, which will be coated with an epoxy coating. Ecology has verified with the Permittees that this sump is in an area that is inspectable, and maintainable. Any concrete coating selected shall meet certain performance standards and be maintainable pursuant to Condition III.10.E.5.h, shall be inspectable pursuant to Condition III.10.C.5.c.i. It is Ecology's understanding that the specific coatings for concrete containment systems have yet to be selected. Condition III.10.E.9.b.v. was broadly written to require secondary containment and leak detection system materials selection documentation, allowing*

*the Permittees flexibility in providing documentation that best demonstrates the material's compatibility with the wastes to be handled. Prior to coating installation, please submit for Ecology review and approval, procurement specifications, vendor, or other information that demonstrate the selected coating is suitable for the types of waste to be handled, for placement into the Administrative Record.*

Response: Documentation establishing the suitability of the selected special protective coating will be provided in accordance with Condition III.10.E.9.b.v prior to the installation of the special protective coating.

5. Material Selection for Building Secondary Containment/Leak Detection, 24590-WTP-PER-M-02-001, Revision 2

Ecology Comment:

5a. *General: In order to expedite Ecology's review, please include other documentation (e.g., manufacturer's data showing the characteristics of the liners and the type of recommended service, material data sheets, etc.) in future submittals.*

5b. *Page 2-3, Section 3.2.1: Materials Selection documentation for epoxy liner material(s) must be submitted for Ecology review and approval prior to installation pursuant to Condition III.10.E.9.b.v. Please see Comment 4.*

Response:

5a. Material selection reports submitted in tank packages per Condition III.10.E.9.c demonstrate that stainless steel is a satisfactory material to contain waste being managed at the WTP. Because stainless steel has been shown to be satisfactory for tank system components, it is also satisfactory for use as a secondary containment liner.

5b. Documentation not already included in the referenced document that is needed to establish the suitability of the selected coatings will be provided to Ecology in accordance with Condition III.10.E.9.b.v as listed in Ecology's Comment 4.

6. Secondary Containment Design, 24590-WTP-PER-CSA-02-001, Revision 0

Ecology Comment:

6a. *Page 5 of 7, Figure 3 and Page 6 of 7, Figure 4: In the next revision of these drawings, please indicate the slope of the liner plate installed under the vessels.*

6b. *Page 5 of 7, Figure 3: Prior to installation of the special protective coatings, please revise this drawing and submit for Ecology review and approval pursuant to Condition III.10.E.9.b.ii., coating details at the floor to wall junction, that is, show how the coating*

*provides an adequate water stop at the floor to wall junction, considering any potential movement that could cause cracks or gaps in the secondary containment.*

Response:

6a. Figure 3 of *Secondary Containment Design* identifies the slope of the liner plate under vessels to be a minimum of one percent. The purpose of Figure 4 is to identify how waste vessels are supported. We agree the legend identifying the typical details and the figure title could be confusing. The figure title and typical detail legends was clarified and provided as *Secondary Containment Design* Revision 2 in Permit Design Package LAW-001.

6b. Figure 3 of *Secondary Containment Design* Revision 2 provides a detail showing the special protective coating at the floor-wall junction. In addition, documentation establishing the suitability of special protective coatings will be provided to Ecology in accordance with Condition III.10.E.9.v.

7. Hydrogen Accumulation in WTP Tank Systems, 24590WTP-RPT-PR-02-002, Revision A

Ecology Comment: *Please submit one controlled copy of the Preliminary and Final Safety Analysis Reports for each facility when they are available.*

Response: An uncontrolled version of the Preliminary Safety Analysis Report (PSAR) and Final Safety Analysis Report (FSAR) for each facility will be provided for Ecology's information when they are available. Documents are kept current by being updated on the externally available DocSearch. Additionally, the WTP will add Ecology to the PSAR/FSAR distribution list to receive uncontrolled copies of these documents.

8. Installation of Tank Systems, 24590-WTP-PER-CON-02-001, Revision 0:

Ecology Comment:

8a. *General: Please revise and resubmit this document with the next design package submittal, providing information for each quality evaluation that would be part of final installation. In addition, include information on how the results of these evaluations are tracked and documented.*

8b. *General: There is no description in this plan on how discrepancies will be remedied before the tank system is covered, enclosed, or placed into use. Please revise and resubmit this document with the next design package submittal, addressing how discrepancies will be remedied before the tank system is covered.*

8c. *Page 3, Section 2.4: The text indicates an independent qualified installation inspector or registered professional engineer will inspect tanks systems in accordance with WAC 173-303-640(3)(c). Please note, Condition III.10.E.3.a requires an IQRPE vs. a registered*

*professional engineer. Please revise the text to clearly indicate this requirement in the next design package submittal.*

8d. *Page 3, Section 2.4: Please note, Condition III.10.E.3.g also requires the IQRPE to consider field installation reports with the date of installation when certifying proper installation of a tank system. Please revise the text to include this requirement in the next design package submittal.*

Response: The Installation of Tank Systems document will be revised to reflect information for quality evaluations of final installation and how they are tracked and documented, how discrepancies are remedied before tank systems are covered, enclosed, or placed into use. A requirement will be added to Section 2.4 of the document for the installation inspector or IQRPE to consider field installation reports with the date of installation when certifying proper installation of tank systems. In addition, Section 2.4 will be revised to reflect consistent verbiage of Condition III.10.E.3.a, "an independent, qualified, registered professional engineer (IQRPE)". The revised document is anticipated to be included with Permit Design Package PTF-005.

9. General Arrangement Drawings 24590-PTF-P1-P01T-P0006, Revision 1; 24590-PTF-P1-P01T-P0009, Revision 1; 24590- PTF-P1-P01T-P0012, Revision 0; 24590-PTF-P1-P01T-P0014, Revision 1; 24590-PTF-P1-P01T-P0015, Revision 1

Ecology comment:

9a. *General: Legends for room numbers and names, equipment numbers and names, and vessel numbers and names, etc. are not shown in the drawings. Please submit this information, either on the drawings themselves, or in some other form in the next design package submittal. This information is required for all future design drawing submittals.*

9b *General: As discussed in several meetings with the Permittees and in the Fact Sheet, the permit design drawings provided show darker print, only regulated areas, with other areas in lighter print ("ghosted" or "in phantom"), or the area is clouded. While the areas considered non-regulated are lighter, they have in previous submittals, still been legible. Ecology has two comments concerning the presentation of non-regulated areas in this design package submittal.*

*First, non-regulated areas are no longer legible, preventing Ecology from independently verifying that all regulated area have been included. For the design drawings in this submittal, and in all future submittals, the Permittees shall ensure all non-regulated areas are legible. In addition, to expedite Ecology's verification and review process, for the general arrangement drawings listed above and in all future design drawing submittals, please submit two copies of the latest revision of the actual design drawings the WTP Unit will construct to show all regulated and non-regulated areas. Please note only permit design drawings will be included in the Permit. If Ecology notes a discrepancy between permit design drawings and the actual construction design drawings, the discrepancy will*

*be discussed and resolved with the Permittees, and if necessary, the permit design drawing will be revised and resubmitted for incorporating into the Permit.*

*Second, each of the general arrangement drawings included in this submittal in the notes portion of the drawing, a statement that reads "THE PORTIONS OF THIS DRAWING SHOWN IN PHANTOM ARE CONSIDERED NON-PERMIT AFFECTING AND ARE NOT SUBJECT TO THE REGULATORY REQUIREMENT OF THE WAC CODE FOR THE DANGEROUS WASTE PERMIT." As you know, normal changes to non-regulated areas included in the Permit are processed as Class 1 Permit Modifications, pursuant to WAC 173-303-830. This allows Ecology the opportunity to determine if changes to non-regulated areas impact dangerous waste areas/operations. Because of the size, complexity and sheer volume of these types of modifications that will be generated for the WTP Unit, Ecology agreed to allow the Permittees to differentiate between regulated areas and non-regulated areas, eliminating the need to process changes to non-regulated areas through the Class 2 permit modification process. As you are aware, this process carries a certain amount of risk for the Permittees. If changes to non-regulated areas impact dangerous waste areas/operations, they are subject to the permit modification process and if not identified early, could cause delays in construction, or retrofit of constructed area to meet regulatory requirements. The above statement, included in the notes portion of each drawing, must be qualified with the wording "to the extent that those portions do not impact dangerous waste area areas/operations." For the general arrangement design drawings listed above, and for all future design drawing submittals, please include this qualifier.*

Response:

9a. Room and Equipment lists will be provided in future submittals with general arrangement design drawings. A room and equipment list for the PT Facility below grade was included in Permit Design Package PTF-002. The Room and Equipment List for PTF-002 was revised and resubmitted to correct a discrepancy, which identified VSL-0033 in Room P-B003 as VSL-0034.

9b. To aid Ecology's review of the design packages, hard copies of the source drawings will be provided at the weekly Dangerous Waste Permit Integration meeting or in conjunction with draft package reviews. Source documents from which the permit drawings were developed are available on the externally available "DocSearch;" Ecology staff has been provided access to this system to facilitate the permitting process. Future drawing submittals will include revised ghosting format that will make the text more readable.

In addition, the following clarifying verbiage will be added, "...DANGEROUS WASTE PERMIT TO THE EXTENT THAT THOSE PORTIONS DO NOT IMPACT DANGEROUS WASTE AREAS/OPERATIONS." Drawings included in current submittals will be updated, certified, and resubmitted, to reflect revised line weight and style, and to reflect the revised permit drawing's note on applicability of dangerous waste requirements.